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finest specimens of such shrubs to be seen anywhere in the world.

Scattered through the half garden, half park, are artificial ponds, called 'lotus-ponds,' set in a curbing of granite, with islands bordered in like fashion. In the same manner the brooks are confined and fringed, and are spanned by stone bridges at intervals; and yet so well done is the work that it seems in keeping with its surroundings. At all points where a particularly pretty bit of landscape presents itself, is found a summer-house; for a Korean does not combine the idea of exercise with the enjoyment of nature, and prefers to drink in the scenery where at the same time he can sip his tea.

Throw over the greater part of the scene the artistic touch of neglect and incipient ruin, and you have some idea of the grounds of the New Palace of Söul. PERCIVAL LOWELL.

THE YUCHI TRIBE OF INDIANS, AND ITS LANGUAGE.

THE ancient domain of the Yuchi or Uchee tribe on both sides of Middle Savannah River probably does not shelter any full-blooded Yuchi man or woman at the present time; but in the remote corner of the Indian Territory, where the tribe is settled now, it tenaciously clings to its ancient customs and habits, its beliefs, dances, and busk festivals. Very few of this aboriginal colony on the southern banks of the Arkansas River can converse intelligibly in English: they do not even mix a great deal with the Creeks, by whom they are surrounded on all sides, but live quietly and happily on their farms. Their myths consider the sun as a female, and the Yuchi as her children. When the last Yuchi dies, the whole world will become extinct also. The moon is regarded as of the male sex, and as the suitor of the sun.

Although the Yuchi tongue differs in its radicals from all American languages heretofore explored, it exhibits some general resemblance in structure to Creek and the other dialects of the Maskoki family. It is possessed of the same alphabetic sounds as this, but shows slight differences in their utterance, and is as prone to nasalize its vowels as Cha'hta and the Sioux dialect of Dakota. Syllables and words close with vowels almost throughout; and the structure of the syllable is, quite as invariably as in Ojibwë, one or two consonants followed by a vowel, diphthongs being rare and always adulterine. The mute consonants do not show the tendency of Creek to

be uttered at the alveolar or front part of the palate. A large number of terms are oxytonized, that is, emphasized on their last syllable; but the Hottentot clucks, which have been attributed to the Yuchi language, do not exist in it. None of the nouns inflect for case. The adjective does not inflect for number; but the substantive nouns assume the ending *ha*, which I suppose to be abbreviated from *wahdle* ('many'), a term which also appears as *hdle*. The decimal system forms the base of the numeral series, and not the quinary, which is the most frequent one in America and in other parts of the world. The existence of a dual generally shows that a language has remained in a highly archaic state; but in Yuchi no trace could be discovered of it, neither in the noun or pronoun, nor in the verb, although the Maskoki dialects possess it in the latter. The verb has a personal and temporal inflection, but is not by any means so rich in tense forms as Creek, Cha'hta, or Hitchiti. But like these, it reduplicates the second syllable of the verbal base to form iterative, frequentative, and distributive forms of conjugation. In the third person of the pronoun, distinction is made not only between male and female, but also between races: since 'they,' when referring to whites or negroes of both sexes, is expressed by *lewénu*; when referring to Indians, by *lehénu*. 'She,' when pointing to an Indian woman not related to the one speaking, is rendered by *léno*; when related to him, by *lesséno*. All these gender distinctions are also expressed in the intransitive verb.

The gentes of the Yuchi people are identical with those of the Creeks and Seminoles, and, like the Náktche gentes, are evidently borrowed from them. The descent is therefore also in the maternal line. ALBERT S. GATSCHET.

RECENT INVESTIGATIONS UPON CHOLERA.

THE cessation of the cholera epidemic in Europe, since the advent of cold weather, has prevented the occurrence of much of interest in this direction since our last notice of the subject in *Science*. The English cholera commission, a note of whose labors was made some weeks ago (vol. v. p. 41), has returned, and has made a full report of its labors, which seem to contradict Koch's assertions in every vital point. We had hoped to receive the printed report before this, but have failed to do so as yet.

The most interesting work upon the comma bacillus of cholera, recently published, is that of Johnne (*Zeitschr. f. thiermed.*, xi. 87), in which he gives the methods of culture, staining, and preparation of the

organism, and emphasizes its differences under cultivation from any of the other bacteria yet compared with it, paying especial attention to the bacillus of Finkler and Prior. To emphasize the difference still more, he gives figures illustrating the different appearances of the cultivations of the two organisms, and the different ways in which they liquefy the culture-material (*nahr-gelatin*). This work of Johnne's is of such special interest just at present, that we feel justified in announcing that it may be purchased in separate form of C. W. Vogel, in Leipzig.

Buchner (*Münch. ärztl. intell.*, 1885, 549) finds a constant difference between Koch's and Finkler and Prior's organisms under cultivation, and adds his testimony to the effect that confusion of the two should be impossible. Doyen (*Soc. biol.*, Dec. 13, 1884) gives an account of various forms of bacteria, observed microscopically and under cultivation, in seven cases of cholera. These were found in the liver and kidneys; but as no data are given as to when the post-mortem examinations were made, how soon after death, etc., and as no inoculation experiments are as yet announced (as far as we have seen), the author is hardly justified, from these observations alone, in heralding 'the end of the reign of the comma bacillus.'

Pettenköfer's challenge to Koch, for it really amounts to that (*Deutsch. med. wochenschr.*, 1884, 818), has not yet been accepted, as, for various plain reasons, it probably will not be. This was, in effect, to produce twenty or one hundred volunteers besides himself as subjects for experimentation, to allow a preliminary gastro-intestinal catarrh to be produced, and then to swallow any reasonable amount of a pure culture of the cholera bacillus. Such a challenge as this may be effective, but naturally is not scientific for the reason that no such experiments can be carried on with precision.

Turning to subjects not immediately connected with the discussion of the specific bacterium of cholera, there have been some contributions to the literature of the subject worthy of attention. Villiers (*Comptes rendus*, 1885, 91) speaks of an alkaloid (ptomäine) found in the cadavers of two persons dead of cholera. It was found in notable quantity in the intestines, and in much less amount in the kidneys, liver, and heart's blood. It is liquid, has an acrid taste, and a distinct odor of hawthorn. It is alkaline, and an active base, set free by alkalies, but not by the alkaline carbonates. Iodide of mercury and of potassium give a white precipitate with its solutions and those of its salts. Picric acid gives a yellow, and chloride of gold a yellowish-white precipitate. Concentrated solutions give a white precipitate with tannin and bichloride of mercury, but chloride of platinum and bichromate of potash give no precipitate. Ferrocyanide and perchloride of iron give a very slight and slowly appearing precipitate. Sulphuric acid placed in contact with the alkaloid gives a very faint and quickly disappearing violet color. The chlorhydrate of the alkaloid is neutral to litmus-paper. It crystallizes in long fine transparent needles, which are exceedingly deliquescent.

Then follow certain physiological experiments, limited in number by the small quantity of the alkaloid at command. The effects produced were a remarkable variation of the pulse-beat, contractions of the limbs, anorexia, and death in four days, of the animal experimented upon (rabbit). Apparently the author did not look for the reproduction of the ptomäine in the body of this animal, — an experiment which would have been of interest as tending to show whether it were connected with the growth of any special micro-organism. The author proposes to continue his investigations as to the occurrence of other special alkaloids in acute diseases, especially in typhoid-fever. He offers a pregnant suggestion in this connection, that, if it turns out that these diseases terminate by the formation of these poisons (ptomäines) in the system, it may be possible to administer antidotes continuously until the cause of their production has disappeared, — thus, for cholera, the continuous administration of iodine-water to form an insoluble compound with the alkaloid; or, if this prove too irritating, the iodide of starch might be used.

Rivière (*Comptes rendus*, 1885, 157) gives a short statistical review of the cholera epidemic in Paris. From Nov. 4, 1884, to Jan. 15, 1885, the dates of the first case admitted and the last discharged from the Paris hospitals, there were 1,080 cases, — 636 males and 444 females. From these a small number must be deducted for errors of diagnosis. There were 587 deaths, or 54.15%. Of the men, 340 died, or 53.46%; and of the women, 247, or 55.63%. These figures reduce the percentage, as given in *Science* (v. 33), somewhat, but at the same time show that the mortality was no lower than usual in epidemics of cholera, and certainly not so low as has been indicated.

Pouchet (*Comptes rendus*, 1885, 220) speaks of the results of investigations upon the modifications undergone by certain secretions under the influence of cholera. He worked upon the bile, the dejections of the cold period, the urine, and the blood. He gives some further account of the ptomäine spoken of above, and a very interesting history of its poisonous effects upon himself during its preparation.

FROM SUAKIN TO BERBER.

SINCE the repulse of the English forces on the march to Khartum by the way of the Nile, attention has been drawn anew to the possibility of constructing and operating a railroad-line from Suakin to Berber. A line of some two hundred and fifty miles in length would easily bring the produce of the Sudan to a seaport. And the reasons why it has not been constructed heretofore are stated to be, that "Egypt had no navy. The khedive did not wish to put the key to the Sudan in the hands of the sultan, or of England, or Italy; nor did he wish the commerce of the Sudan to be diverted from the Nile valley." The military necessities of the situation have now, how-